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Lubrication

A Technical Publication Devoted to the Selection and Use of Lubricants

THIS ISSUE

Good Practice in Handling and Storing Lubricants

PUBLISHED MONTHLY BY
THE TEXAS COMPANY, U.S.A.
TEXACO PETROLEUM PRODUCTS

JANVS

the Roman god, after whom January was named, was shown on ancient coins as having two faces—one looking forward, one looking back.

This time of the year is a good time to look back on 1923 and to look forward into 1924.

1923 was a wonderful year for us. More and more industrial concerns came to us for help in conserving Equipment and Power through correct and scientific lubrication.

They have shown their appreciation of Texaco Service (the right oil in the right place in the right amount—and the co-operation of Texaco Engineers) by renewing their contracts.

From where we stand now, 1924 gives every promise of being a mighty fine year for us and a year of satisfaction to numbers of clients who acknowledge the correctness of the Texaco Policy by the pleasant continuation of their patronage.

We thank them.

For 1924 our Engineering forces have been augmented and our deliveries for service have been expanded to take on all the new business the year will bring us.

We are here for service and shall welcome the opportunity of outlining Texaco Lubricating Service any time you call on us.

We will thank you for the opportunity — and you will thank us for the *results*.

There is a Texaco Lubricant for Every Purpose

THE TEXAS COMPANY, U. S. A.

Texaco Petroleum Products

Dept. H, 17 Battery Place, New York City

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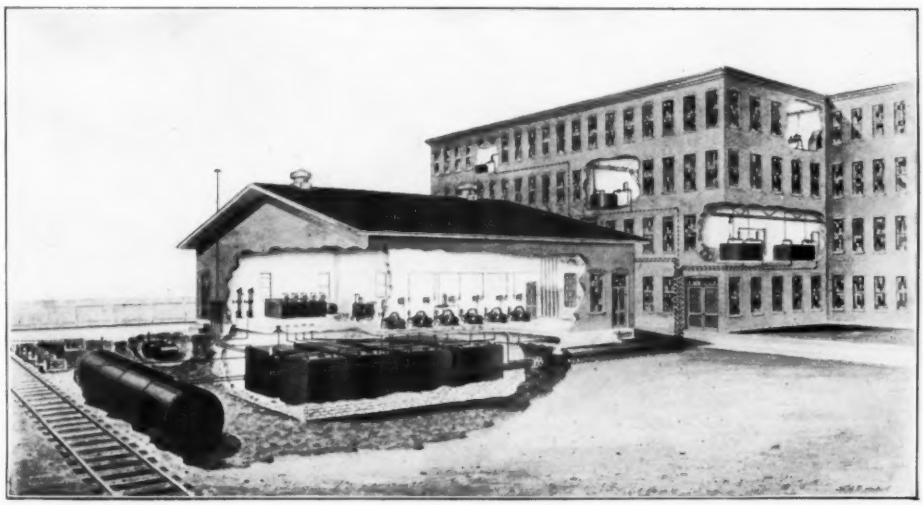


Courtesy of S. F. Bowser & Co., Inc.

Fig. 1.—Sectional elevation of an oil house installation in a modern industrial plant. Note the tanks with their respective pumps, and piping to various floor levels in the plant.

Good Practice in Handling and Storing Lubricants

THE development of industrial machinery over the past twenty years has been largely brought about by worldwide demands for greater production. Today, as a result, power, high speeds and continuous operation are the factors in practically every industry. In their attainment, lubrication is universally agreed upon as being the controlling element. But lubrication can only be an effective counterpart if it is permitted to function at its best; *i.e.*, by the use of scientifically refined lubricants, adequately suited to the service involved and applied to the bearing surfaces in proper amounts to be most effective both in the reduction of friction and in the removal of frictional heat.

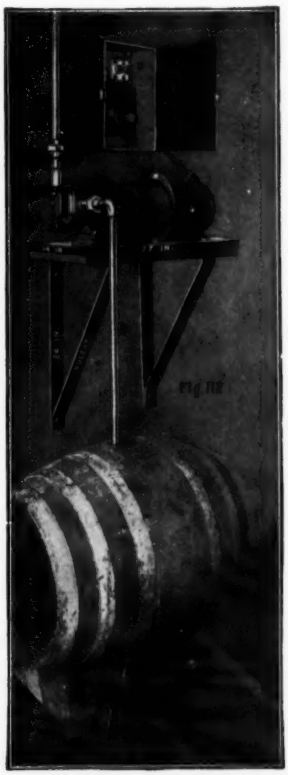
Refinement is, therefore, a salient factor, and should be demanded by every purchaser of lubricating oils, as primary insurance that the rate of production of his machinery will not suffer. But let us pause for an instant;—proper refinement is not the only essential consideration. In fact, is it not relatively useless to insist upon this if subsequent handling and storage of the lubricants are to be neglected?

The reputable marketer of lubricating oils today is making every endeavor to supply you MR. CONSUMER, with products which will increase the operating efficiency of your plant. Hundreds of thousands of dollars are spent annually in your behalf by the oil industry in research and experimental work. Every phase of engineering and chemistry is dealt with, and both in the production and usage of lubricants the maximum of service is sought. No sooner is a new process developed than intensive experiments are instigated from a lubricating point of view in an endeavor to determine the exact character of the lubricant which will most effectively serve the machinery involved. So much for the responsibility of the oil refiner.

Lubricants are prepared for you, MR. CONSUMER, properly refined and securely packed. Therefore, except in extreme cases of accident in handling, etc., your lubricants will be delivered to you in a state of purity beyond question.

From this point on, your responsibility commences. Any lubricant is only as good as the care it is given in storage and handling. The most perfect turbine oil, or stainless textile lubricant, for example, will each fall short of its intended purpose and give rise to difficulties if stored or handled in such a manner as to promote contamination. For, regardless of how carefully any lubricant may be refined or selected, if sufficient precaution is not taken to preserve its purity prior to usage, much of its effectiveness will be lost when it is actually put into service.

The exacting specifications under which lubricants should be prepared are your protection, but they must be followed through in actual operation with the same careful thought. Just because a turbine oil is obtainable with practically no water or foreign sediment content, is no assurance of its ultimately giving satisfactory service if, for example, the shipping container has been roughly handled, allowed to remain exposed to the weather, or so stored that foreign matter can gain entry. This will be especially true of wood barrels where cracking or warping of the staves or heads through weathering or careless handling, will in all probability cause particles of glue to be chipped loose, or reaction brought about between the glue lining and moisture due to entry of the latter through cracks, etc. It is well to add that glue is always used as a lining medium for wood barrels, to prevent oil leakage.



Courtesy of Wm. W. Nugent & Co.

Fig. 2.—Geared Motor Driven Rotary Oil Pump set for the pumping of oil from a barrel to an elevated storage tank.

It is certainly unfair to blame the lubricant for deficiencies which are readily preventable if the consumer uses reasonable judgment in handling the former after it is delivered to his plant.

Factors Involved in the Storage of Lubricants

In general, the storage and handling of lubricants will involve a number of factors which must be given consideration, such as:

1. The construction of the oil house or oil room.

2. The storage tanks and their accessory equipment, such as heating coils, etc.

3. The equipment installed for the handling of the products and shipping containers.

4. The provisions for measuring oils in order to enable a suitable record to be kept.

5. The manner in which the oils are distributed to the various units or departments in the plant.

6. The extent to which semi-solid lubricants are to be used.

7. The manner in which the oil house is to be managed, and records kept.

The Oil House or Oil Room

In this matter of oil storage the primary requisite for any concern using a considerable volume of lubricants is to provide for a central oil storage house, or at least set apart a special room in some part of the plant from which lubricating oils and greases can be issued to the various departments as needed, and in suitable though not excessive quantities. In turn all new supplies of such oils should be delivered here for storage until required.

Naturally, whether or not any plant will be justified in going to the expense of constructing an independent oil house will depend to a great extent upon its size and the amount of equipment involved which requires lubrication. Of course, there will be considerable expense attached to such an installation. For this reason, therefore, many plants which are adjacent to oil supply depots frequently set aside a corner of the engine room or storehouse for the storage of lubricants, and keep these latter in the shipping containers until they are empty, when they are forthwith returned to the oil dealer. Naturally the objection to oil room storage is that there will be considerable possibility of contamination of the lubricants. Such localities are often very carelessly hosed or cleaned out, with the result that dirt will sometimes be swept into the drip pans and measures. There will also be considerable chance for leakage and wasting of oils in such a room, unless an unusually careful employe has sole and complete charge and keeps it locked and inaccessible to other employes.

Courtesy of Wm. W. Nugent & Co.

Fig. 3.—Flexible cover type of steel cabinet for auxiliary storage of lubricating oils.

Oil House Construction, etc.

Where an oil house is warranted or an oil room is set aside, it should, whenever possible, be of fireproof construction throughout, with brick, tile or concrete walls and floor, and a tile, metal or slate roof or ceiling built on steel beams or rafters. The floor should be fitted with drains. The danger of fire in a modern oil storage house will usually be practically negligible; yet constructional features of fireproof nature are the best sort of insurance, and first cost unless prohibitive should not be dickered over. In addition, cleanliness will be more easily maintained in such a building or room than in one where woodwork is used, which would soon become splashed and oil-soaked. Only recently a plant was inspected which prided itself on its oil storage facilities and the provisions taken for maintaining the purity of its lubricants. An oil room had been laid out, measuring pumps with drains installed, the tanks located below grade, regular lubricating accounts kept and all employes educated in the matter of proper lubrication.

Truly, an ideal layout thought our engineer.

Then he asked the General Superintendent if he could see the tank room. This gentleman acquiesced but was forced to admit he had never seen it himself. So they proceeded below, via a ladder in an areaway outside the building.

"Splash"! went our engineer as he stepped off the ladder into six inches of muck. Then "Splash"! followed the General Supt. Whereupon both broke the third commandment forcibly.

When their eyes were accustomed to the semi-darkness they noticed they were standing in a pool of wood shavings, oil and mud. In one corner were arranged the storage tanks, in another a heterogeneous mass of broken barrels and junk. There was no provision for heating this room, as our engineer noticed,—the time being mid-winter. As well, flakes of snow drifted down through the areaway to add to the muck on the floor as there was no trap door or cover at the top.

In all, a delectable mess and a vivid example of how oils should not be stored. There must have been oil leaks, else how came the oil on the floor,—which by the way was earthen, with no drainage whatsoever,—where it should have been concrete. Without a doubt the tanks would ultimately suffer if they had not already done so,—for water, mud, etc. are certainly corrosive,—with the subsequent occurrence of rusting and leakage.

Doors and windows are another factor requiring consideration in oil house construction. Best practice recommends as few of these as possible, and those that are requisite should be of steel frame or roller type, fitted with wire glass and automatic closing devices. Suitable fire extinguishing equipment should also be installed.

Location of the Oil House

It will be advisable to give considerable thought to the location of the oil house or the part of the storehouse or power house which is to be set aside for conversion into an oil room. An appreciable amount of time will always be lost in the laborious handling of heavy oil containers; as well, considerable possibility of damage will be present both to lubricants and containers if the latter are rolled or tumbled about unnecessarily. So, our first thought should be to locate the oil room or house as close as possible to the railroad siding, dock or street. Thus the containers will not be subject to any more handling than absolutely necessary in their transference from cars, boat or auto truck to the point of storage.

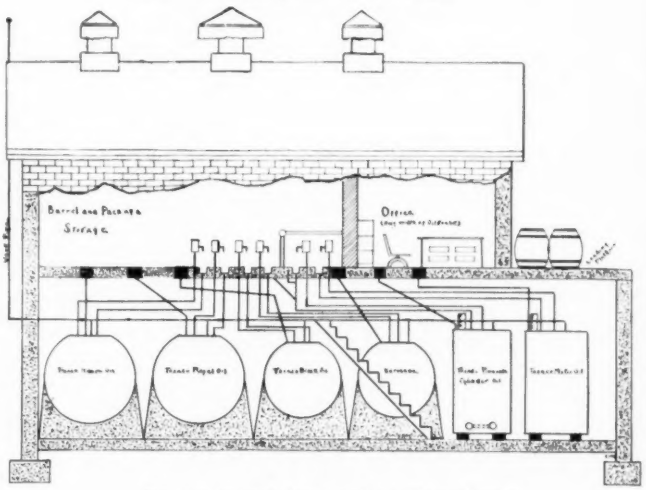


Fig. 4.—Sectional elevation of an oil house showing respective location of tankage and other equipment.

Where handling of filled containers from one level to another is involved, the matter of hoisting is necessarily an item that must also be considered. In the first place hoisting is expensive, but more to the point, it entails a certain amount of severe handling of the containers which may easily lead to contamination of the oils or greases through sprung seams, etc. Wood barrels especially will suffer, and warped and cracked heads, or the jarring loose of particles of the glue lining, will often occur. It can be appreciated that any damage to the container which may break the seal and lead to contamination of the contents through entry of water or foreign substances, is a serious matter.

To guard as completely as possible against such occurrences, "one level" handling is always best. In other words, the platform of the oil house or storage room should, as nearly as possible, be on a level with the car floors or dock; or where containers are to be delivered by auto truck, on a level with the floor of the

average truck. As a result of such construction, containers can be rolled, trundled on hand trucks, or handled by a portable conveyor, directly from the delivering medium to the filling hatch of the storage tanks, where this is located at the floor level, or to the hoisting device above the tanks if they extend above the floor.

A minimum of labor, time lost, damage to containers, and waste or contamination of the lubricants will be the result of such a layout. It will certainly pay in the long run.

In the Railroad Service

Certain of the railroads have developed the unique idea of building their oil house on wheels. In other words, an oil car, fully equipped with tanks, pumps and other accessory equipment is used, either in part or entirely as a storage medium. The fixed oil house, etc. in many cases is eliminated, unless the volume of lubricants used warrants it. See Figs. 5 and 6.

The value of such a car can be readily appreciated when we figure the mileage that is involved. The era of the "hot box" in fact is becoming a thing of the past, for the railroad people, more than any other consumers, appreciate the importance of lubrication and the value of pure uncontaminated lubricants.

Storage Tanks

Having reviewed the features that the modern oil house or storage room should embody, the question of storage tanks and their appurtenances should follow. In any plant the type, number and size of storage tanks that it may be necessary to install will depend upon the volume and nature of the lubricants that are to be stored. In general, where an oil house is involved it will usually be practicable to build it with a basement, and provide for bulk storage tanks located therein; the main floor in such a house would thus serve as the receiving and delivering room, the tops of the tanks projecting above the floor or not, according to the type of house. Many plants prefer to keep all tankage below the floor level, devoting this entire area to delivery pumps and other necessary accessories.

The number of such tanks to install will naturally depend upon the number of different grades of lubricants that the plant will require. In every case, the rate of plant consumption involved should be considered. Where, for example, but small quantities of certain products are to be stored for any length of time, in the interest of economy of space and expense, it will be best to keep them in the shipping containers over the period of storage, rather than plan to transfer them to more permanent tanks.

Methods of Delivery of Lubricants

There are two general methods by which fluid lubricants can be delivered to the plant, and which we must consider where planning for storage tanks, viz:

1. Bulk delivery by tank car or boat, and
2. Package delivery in steel drums, barrels or cans.

Where bulk delivery is involved, the location of the tanks with respect to the delivery level is naturally important. Usually in such plants the lubricant is transferred from the tank car or boat through a hose connection. The same hose should never be used for delivery of fuel oils, black oils, etc. as for lighter lubricants, or signal oils, due to the possibility of serious contamination occurring. To facilitate matters and reduce expense, gravity flow should be taken advantage of by locating the tank filling hatch below the level of the outlet valve of the tank car. Where boat delivery is involved, rarely can we avail ourselves of this simple procedure, and the oil must usually be pumped from the ship's tanks to the oil house.

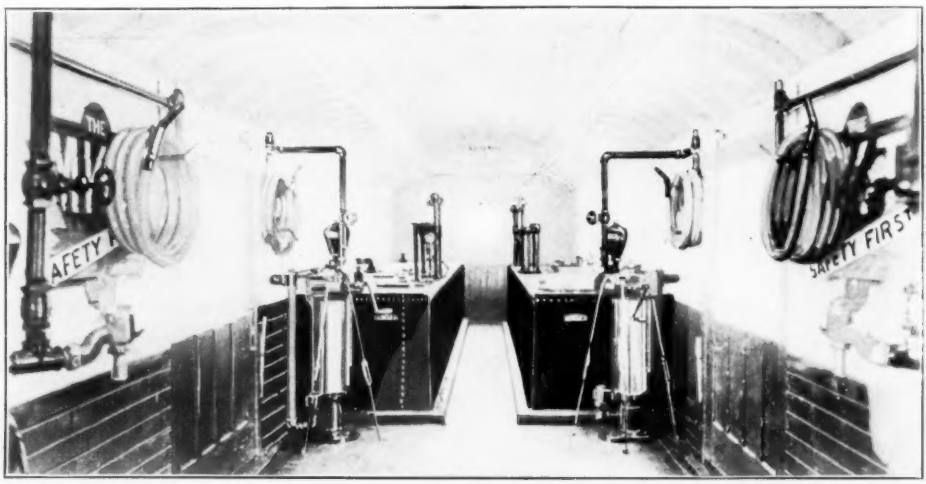
Care must be taken in the location and operation of valves, when pumping is necessary, inasmuch as where a number of tanks are involved there will be possibility of drawing some cheaper grade of oil into the suction line to contaminate a more highly refined product. Interconnecting valves should be tightly closed before pumping is begun.

Package delivery, as the shipment of lubricants in drums, barrels, or cans is usually termed, will also be facilitated if gravity is utilized to the fullest extent. This has already been covered in discussing the location of tanks.

Temperature Control

Lubricants can always be most effectively handled where absolute control of oil house and

tank temperatures is possible. Therefore, thermal conditions must always be thoroughly studied in planning storage tank location in either an oil house or an oil room. Where it is possible to employ basement or sub-surface location for the entire tank or at least the major part of it, this should always be done, inasmuch as that portion below the floor or ground level will not be subjected to as great a variation in temperature, provided the building is of relatively solid construction. In many such installations the temperature can be so easily controlled that it will be often possible to close the basement sufficiently by means of sealed trap doors, etc. and maintain the entire room at the requisite temperature for pumping even the heavier oils that must be handled and still keep the delivery or pumping room above, cool and comfortable. Wide temperature fluctuations may lead to "sweating" and condensation of moisture within the tanks. Products such as turbine oils, etc. can be seriously contaminated by the entry of water in this manner.



Courtesy of S. F. Bowser & Co., Inc.

Fig. 5.—Interior view of a railroad oil car showing tanks, pumps and fire equipment.

Every precaution must be taken, however, to insure retention of heat. We should never do as one plant recently did,—spend a neat sum on tanks, pumps and other equipment, and set the tanks in a semi-covered basement exposed to the weather. Naturally they experienced trouble during the winter. Whenever the temperature dropped below the pour test of their steam cylinder oils, the pumps functioned improperly due to these products being abnormally sluggish. Of course, the oil company received a complaint that their oil was "too heavy"; but they adjusted it readily with the application of common sense, a steam coil, and some otherwise waste exhaust steam.

Wherever heavy, viscous products such as valve and cylinder oils, greases, or compounds etc. are to be stored the oil house or oil room should always be equipped with steam heating coils, especially where climatic temperatures may vary over a wide range. For this reason many storage tanks for lubricants are built similar to fuel oil tanks, with heating coils within. In such installations the coil should always be composed of bent pipe, and no pipe junctions or fittings should be present within the tanks, owing to the danger of water, or boiler compounds contaminating the lubricants in event of steam leaks at pipe joints etc.

The better practice, however, is to install steam heating coils in the storage room itself or surrounding the tanks. Thus temperatures can be accurately regulated, overheating will not be so apt to cause damage to certain products, and heating can be economically carried out by the use of exhaust steam in practically all cases. Where heating with high pressure steam, the inlet valve should be "cracked" and the outlet valve wide open to prevent overheating and "cooking" of the oil.

Installing the Tanks

In planning an oil house storage tank installation, horizontal location of all larger tanks will always be advisable, in order to obtain maximum distribution of the load on the foundations and reduce the load per unit of area as much as possible. Thereby the possibility of settling will be decreased, and excessively heavy footings and foundations will not be as necessary to carry a load which is relatively widely distributed, provided the ground on which they are to be built is solid and not prone to settle. To insure complete rigidity, the tanks should always be securely anchored to their foundations,—never just rested upon the latter. This will be especially essential in localities where floods, earth movements or explosions, etc. are possibilities, the occurrence of which might disturb the location of tanks and cause broken pipe connections, damage to floors, leaks and loss of oil.

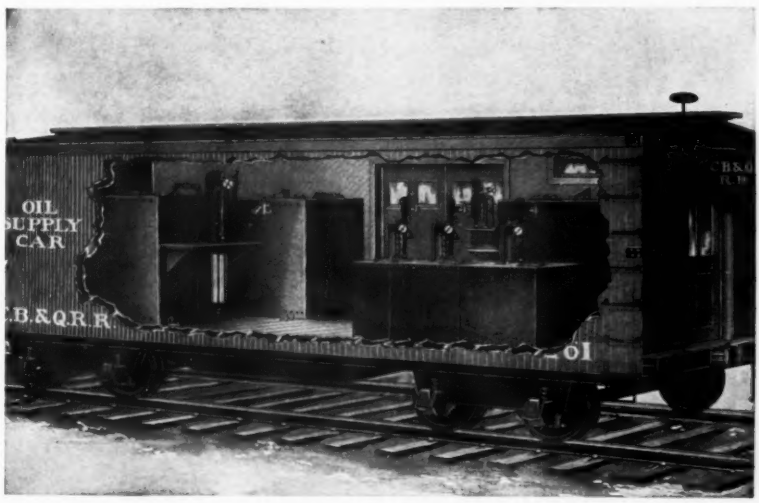


Fig. 6.—Cut away view of a railway oil supply car showing relation of equipment.

Oil Storage Equipment

Both for the handling of lubricant containers and the lubricants themselves, accessory equipment such as pumps, meters or other measuring devices, portable elevators for hoisting or lowering barrels, etc. are always necessary. For the handling of fluid lubricants out of any form of storage tank sealed pumps should be used wherever practicable. In many cases pumps for this purpose are built to meter or measure automatically the amount of oil withdrawn. A measuring device of some sort is always advisable in order that lubricating oil records can be accurately kept, and the oil consumption of the plant or any of its departments checked wherever desired.

Measuring pumps will save considerable time and labor, will enable the oil house or oil room attendants to fill orders promptly, and will insure that the oils are kept free from contamination and in their original state of purity, at least until they are drawn into the distributing containers. The value of orderly oil house operation, and properly kept records of daily, weekly and monthly oil consumption, should never be under-estimated. The effect on the morale of the plant and the economies in consumption of lubricants that can be attained, will be surprising where employes must follow a definite procedure in the obtaining of their necessary oil supplies and where an accurate record is kept of their consumption. This matter of everybody's helper running to the oil tank with a half-pint can should be stopped; it is the reason for the majority of complaints regarding machine breakdowns and excessive oil bills today.

Hoisting Equipment, etc.

Wherever barrels or drums are to be hoisted to the top of storage tanks, or to emptying racks for transference of their contents, it will be advisable to install a portable elevator for the purpose of raising and lowering these containers to eliminate handling and probability of damage as much as possible. It can be readily appreciated that a dead weight of from 400 to 500 pounds will tax the strength of two average men, and for this reason barrels are often dropped and broken.

Most approved practice is to extend a suitable track along the tops of all tanks which are to be filled from barrels or drums, at a sufficient height above them to facilitate location of the

Why Some

Courtesy of S. F. Bowser & Co., Inc.

Fig. 7.—Two men will take from 15 to 20 minutes to punch out a bung and insert a draw-off nozzle which can never be leak-proof.

Oil Bills

Fig. 8.—Then the barrel must be lifted to the proper rack; more time lost,—more chance for a damaged barrel.

Fig. 9.—Waiting! Only too often does he wait too long, or stroll over to gossip with some buddy. Result: overflow, wasted oil and a dirty slippery floor.

Are High

bungs directly over the filling hatches and reduce the possibility of waste. Containers can then be hoisted to this track level, rolled into position above the respective tanks to be filled, and emptied of their contents rapidly, completely and with very little labor.

The Manner in which Lubricants Are Distributed

Distribution of lubricants from the oil house or oil room is important in that it involves a certain amount of time lost on the part of the employes who are to deliver the oils and greases. So this should essentially be studied as a labor-saving problem; though, on the other hand, prevention of contamination must never be overlooked. Naturally the manner of distribution will depend upon the location and number of units that are to be served. Where a number of buildings and departments are involved it will often be practicable and most economical to make deliveries by motor truck, covering perhaps the entire plant at one trip. Other plants which involve but one or two buildings can probably be served by hand truck delivery. In any case it will often be found advisable to supply individual departments with approximately fifty gallons at a time in order to reduce oil house labor.

Where force feed, gravity, or other forms of automatic circulation lubricating systems are involved, which require addition of new oil at more or less infrequent intervals, the necessity of keeping an extensive auxiliary supply of oil on hand in individual tanks adjacent to the machine is practically eliminated. In such cases small hand oiling cans for emergency usage will suffice, because failure in the lubricating system of a turbine, for example, will usually require prompt shut-down in any event. Reciprocating engines, on the other hand, running with splash lubrication can be frequently kept in operation while any normal failures in their lubricating systems are being repaired.

While speaking of this matter of lubricating systems a word in regard to their installation is advisable. Effective lubrication can only be accomplished by use of pure uncontaminated lubricants. But many plants today operating automatic circulation oiling systems, unwittingly deprive themselves of many of the benefits to be gained from such systems by falsely economizing in the first place and purchasing a system of too small capacity, simply because it is cheaper. As a result their oils circulate so rapidly that they are not provided with a sufficient "rest period." Foreign matter is therefore unable to settle out properly, the oil will not have time to cool, the purifiers and filters may become clogged, emulsions may occur, and lubrication difficulties may consequently arise. The natural consequence is to look for some defect in the storage system whereby the oils are becoming contaminated, or to resort to that popular indoor sport of "passing the buck" to the oil company.

The purification of lubricating oils will be dealt with in detail in a later article in LUBRICATION.

Where auxiliary storage in individual departments is to be maintained the type of containers used is important. Preferably they should be of the cabinet type of storage tank, fitted with a suitable hinged cover to afford the utmost protection of the contents. Usually such tanks are equipped with measuring pumps, and so built that any drip from the pump discharge drains right back into the tank.

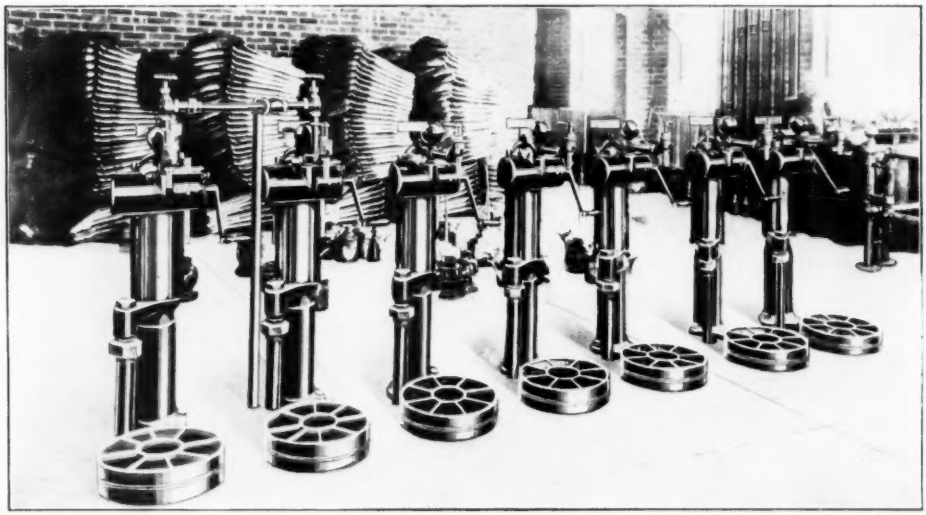
The Storage of Semi-Solid Lubricants such as Greases, Etc.

The extent to which greases, gear compounds and petrolatums are used will be another factor that must be considered in planning the oil house layout. Such products are customarily shipped in wood barrels or steel drums of standard sizes, or in cans of 1, 3, 5, 10 and 25 pounds capacity.

In general it should be a cardinal rule in purchasing greases to never attempt to store any greater amount than actually needed, and to observe every caution to avoid overheating. It must be remembered that oftentimes the oil and soap constituents of certain greases will tend to separate more or less permanently if subjected to abnormal heat. Of course, this will cause a decided decrease in the subsequent lubricating value of the grease.

Where barrel shipments of semi-solid mineral lubricants are involved in any considerable number, however, oftentimes provision for central storage of the products will be desirable,

as has already been briefly stated. Such of these compounds as can be rendered fluid through reasonable heating can be handled like oils, their storage tanks being built with similar filling hatches, rolling tracks and elevator equipment. Thus upon receipt at the plant of such compounds in large amounts, the steam heat



Courtesy of S. F. Bowser & Co., Inc.

Fig. 10.—An arrangement of lubricating oil pumps showing drains. These pumps are of the self-measuring type.

can be turned on in the oil room and barrels promptly hoisted for draining of their contents into the respective tanks set aside for their storage with a minimum of loss.

In this connection it is well to emphasize again the importance of accurate regulation of steam flow and oil room temperatures especially at such a time. When compounds, etc. are to be transferred from shipping containers to storage tanks, whatever the atmospheric temperature it will be usually necessary to raise their temperature (through indirect heating) often quite considerably in order to enable them to flow readily and rapidly from the bung holes.

Where compounds are too heavy to flow with any degree of rapidity under reasonable heating, they must be stored in the shipping containers. In general they can be best handled, as are greases, by a clean paddle or spoon, removing only a sufficient amount to fill the lubricators, etc. each time. In the case of harder grades of greases such as certain railway lubricants for driving journal or rod lubrication, it may be necessary to cut the requisite quantity from the contents of the barrels, in blocks with a knife, inasmuch as such products are altogether too hard to dig into with a paddle or spoon.

To protect the contents of the barrels after the heads have been removed, and to prevent drying out of such products as greases, a removable cover should be always kept tightly in place over the top. Sheet metal is considered the best material for such a cover and preferable to wood owing to its ability to insure a better seal.

Oil House Management

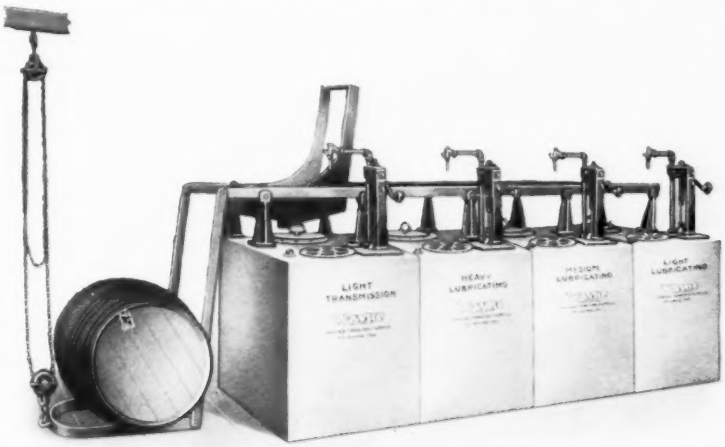
To promote the greatest economy and efficiency in the storage, handling and usage of lubricants, where the size of the plant and the lubricants consumed warrant, this entire matter should be placed under the supervision of a capable lubrication engineer. In fact many larger plants are creating such a position in their mechanical engineering departments today, realizing that an able, technical petroleum specialist can save his salary many times over by reducing wastes of lubricants, loss of time, and cost of upkeep of machinery. Such an engineer should have direct charge of the oil house, and should where necessary be furnished with a capable corps of assistants in order that prompt deliveries and accurate records can be maintained. All lubricants should be issued on requisition only, signed by the foreman in

charge of each department, and should never be issued in excessive quantities, since this has been found conducive to waste in application, etc.

Monthly oil records are of decided value and should be prepared by the lubricating staff and submitted regularly to the executives. By showing inventory of stocks on hand, and records of the amount of each lubricant used throughout the plant, abnormal usage can thus be checked up without delay and steps taken, if necessary, to ascertain the reasons why.

Care and Handling of Containers

Lubricating oil containers, regardless of their character, require careful handling; therefore as little manual labor as possible should be used. Unnecessary dropping of wood barrels, especially, will tend to promote leakage at the seams by springing staves or heads. Hence, it is best practice to always use some form of a portable elevator (as already mentioned) onto which the container can be rolled and then raised to the level of either a storage rack or the top of the storage tank.



Courtesy of Wayne Tank and Pump Co.

Fig. 11.—Arrangement of oil storage tanks with automatic barrel hoist cradle equipment, etc.

Storage racks for barrels and drums, if used instead of main storage tanks, should be built of steel, and in such a manner that individual containers may be removed independently as desired. Barrels of heavier compounds especially should always be stored in the oil house, etc. Otherwise excessive cold may render their emptying a difficult and tedious matter. Both barrels and drums should be stored on the side or bilge with the bung down. It is usually inadvisable to use wood barrels for lengthy storage of lubricating oils, on account of the possibility of contamination as heretofore stated, or loss from leakage or evaporation.

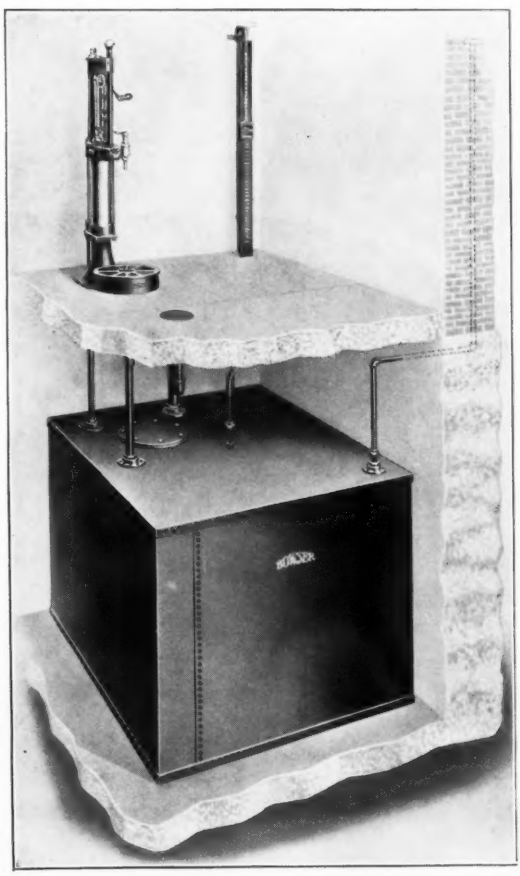
In handling wood barrels it must be remembered that these latter have an appreciable salvage value, and in good condition they are returnable to the oil marketers or are in demand by cooperage firms. Care should therefore be taken to prevent damage while in the hands of the buyer. Holes should never be bored in the heads for outlet of oil or inlet of air. A bung-hole should never be reamed out, since this will require the use of an odd sized bung on the next shipment; therefore the value of the empty barrel will be decreased. Likewise, a bung should never be driven entirely into a barrel as this may cause the bung stave to split, and entail the possibility of particles of glue or wood being jarred into the oil to contaminate it and perhaps cause serious trouble in subsequent lubrication. Careful handling of wood barrels will not only result in the highest value from a resale point of view, but will insure that the lubricating oils will be in fit condition to meet the machine requirements. Bungs should, therefore, be removed by a chisel or bung pick, after tapping the bung stave lightly with a wooden mallet or bung starter.

Empty barrels should be given the same consideration as filled barrels, to prevent damage and insure the receipt of the highest price when they are sold. Wood barrels, when empty, will always be subject to warping of the staves and heads if stored on end or where exposed to the weather. This will be especially prevalent if water is allowed to collect on the heads, or where the barrels are exposed alternately to the effects of the sun and excessive dampness. A wood barrel head will split and warp readily in such a case, causing the glue to loosen and

necessitating complete re-conditioning of the barrel before it can again be used.

Conclusion

It is evident that regardless of how efficiently and economically a lubricant may be selected



Courtesy of S. F. Bowser & Co.

Fig. 12.—Elevation of a basement storage tank showing pump, drain and float level connections, etc.

or used, if prior to usage it is handled and stored in a sloppy, careless manner, all the potential benefits to be derived will be lost. The many serious complications that may result on account of water, dirt, or other foreign matter in the oil, will make it worth while for every consumer to investigate his oil storage conditions, and not rest with seeming assurance that all is well as long as his machinery functions with apparent smoothness.

The more common cautions that should be observed in the storage of lubricating oils to reduce waste to a minimum, maintain the oils in the best of condition, and enable the plant to work in conjunction with the oil manufacturer in obtaining the best and most efficient results from its lubricants, are:

1. Have spilled or dripped oils caught or wiped up promptly.

2. Catch all drippings in a clean tray or pan; allow them to settle for a sufficient length of time to precipitate any dirt or sediment that may have gained entry during exposure; or better, run them through the filter, before using.

3. Install adequate fire protection equipment, and see that this is tested at regular intervals.

4. Use no waste or other material that is liable to shed lint or shreds, for the cleaning of machinery, etc. Contamination of the oils by such foreign matter will often lead to congestion of oil grooves in bearings, or the piping in circulation systems.

5. Collect oil-soaked rags and all other waste matter in a covered, metal container. The oil from same can often be reclaimed and used over again.

Courtesy of Wayne Tank and Pump Co.

Fig. 13. — Cabinet type of auxiliary storage tank.

6. Never allow sand from fire protection sand boxes, or any other pulverized substance such as cement, to enter the oil or oil measures, when this is being thrown on oil drippings on the floor. Sand or cement in a lubricating oil is liable to give rise to all sorts of bearing troubles by producing excessive wear, scoring and over-heating. Such material should be spread carefully, and promptly cleaned up after it has absorbed the oil.

7. REMEMBER cleanliness is always an important factor and such accessories as funnels, measuring cans, etc. should be stored in a dust-proof box or closet when not in use. Any dirt or dust present in such equipment will ultimately lead to contamination and reduction of the lubricating value of the oil.

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EDGAR C. RUWE CO., INC.
47 West Street, N. Y. C.

The Chamber of Horrors that passed away

WE, WHO have been a long time in the oil business, have seen many an oil house that was a true chamber of horrors. Too often it was a dark corner, a place into which were tossed odds and ends, which apparently could not stand the light of day. Usually, too, somebody spread sand or sawdust on the floor to soak up the slopped oil. Barrels stood around collecting dust and dirt until it was impossible to read the brand on the barrelheads.

No wonder oil got dirty! No wonder mistakes were made!

But this has passed, or is passing.

Alert mechanical executives and careful oil house men realize the importance of an oil house that is an oil house.

They know oil economy should start here. And so, in many plants, the oil house or oil room is a well-lighted, painted room that is kept clean, locked and supervised.

The oil is immediately transferred to storage tanks when received. The tanks are kept painted, clean, and plainly labeled. Slopping of oil is stopped; mistakes are the exception. The spirit of pride in keeping things right, which this engenders (and the fixing of definite responsibility) more than pays for itself in oil economy and in careful selection and application of lubricants.

Texaco Lubrication Engineers have helped in a number of cases to clean up and systematize the oil storage situation. They have studied the reclaiming of oil and layout of equipment.

Their experience is at your service. There are many ways in which they will cooperate with your employees.

They know and understand the application of oil, as well as its handling, and they can give you data as to the kind and quantity of Texaco Lubricant for everything in the plant, whether for prime mover auxiliary—or rolling stock and equipment of any kind or type.

THE TEXAS COMPANY, U. S. A.

Texaco Petroleum Products

Do you know what a TRADE-MARK is for?

Possibly you think a trade-mark is put on goods to protect the manufacturer, so that no competitor can imitate his product.

That's only partly true.

The real purpose of a trade-mark is to indicate the origin of the goods so that the public can be protected.

In other words, a buyer, once having bought a trade-marked article, will know later on, at future purchases whether to seek or to avoid products bearing the mark in question.

So, then, a trade-mark should protect the buyer.

The Texaco Trade-Mark does protect the buyer of lubricants.

Every barrel, every can of oil or grease bearing the Texaco Red Star, Green "T" is manufactured at The Texas Company's refineries and is backed up by a positive assurance of uniformity and efficiency.

The more you think of this, the more it will mean to you.

It means no "picking up" of oils and greases and then branding them with the name of the company who "sells" them—but does not always "make" them.

On the contrary, we repeat, every barrel with the Texaco trade-mark contains oil and grease made and handled from the Crude Product to Delivery exclusively—by TEXACO.

Hence, a Texaco guarantee is a real guarantee.

There is a Texaco Lubricant for Every Purpose

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